

The effect of sediment transport on the Geomorphology of the Iranian northern coastal area, Case study: the coastal dunes in Bandar Anzali area

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Abstract

The formation of coastal Geomorphological phenomena in terms of size and type is in direct relation with littoral drift. Sediment reservoir and the strength of tidal and shoreline currents control the formation and absence of Geomorphological phenomena. In Caspian coastal area because of , first lack of stone capes or even sedimentary capes and ,second absence of tidal actions, some forms of coastal sedimentation have not developed. Due to considerable reservoir of sediment and the CCW general flow of Caspian sea and the conditions of dominant wave coasts in most of Caspian coastal area, however, coastal sand dunes, spits and finally some lagoons ,sheltered by the spits, have been formed. In this study, using IRS panchromatic images, Landsat8 + ETM panchromatic images and available reports, the effect of sediment transport leading to formation of coastal reliefs in Anzali Lagoon located in the coastal area of Caspian sea has been investigated. The results revealed that the northern boundary of Anzali Lagoon is ,in fact, a coastal dune which Geomorphologically appears to be a spit. Furthermore, there are traces of five coastal sand dunes in this area. Longitudinal sand dunes are stretched from Tazeh Abad to Hassan Road and the maximum longitudinal stretch is 4 Km. Which is located in Northwest of Bandar Anzali. In addition, accumulated volume of annual sediment transport in this situation is 30000cubic meters; therefore, the net rate of littoral drift, moving from East to West, is estimated to be 25000 cubic meters. Bandar Anzali area appears to have once been lowland resembling a cove and coastal sediment transport has formed spits growing Eastward which their heads have moved toward Southeast within this cove. Upon the fill-up of this lowland by these spits, the current shoreline has been created and the trend, shoreline and the longitudinal sand dunes have become West to East. Studies regarding the coastal changes revealed that Bandar Anzali area is subject to 0.8 mm annual land subsidence; therefore, this process is one of the reasons leading to controlling the littoral drift direction toward the lagoon.

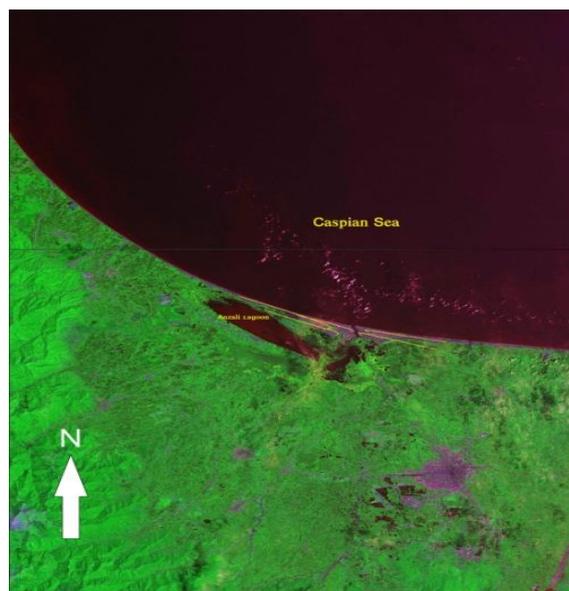


Figure 1: coastal dunes and sandspits in Bandar Anzali area

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Biography

Manijeh Ghahroudi Tali has completed his PhD at the age of 35 from Tehran University in IRAN. She has published more than 60 papers in journals, 6 books and 15 national projects. She was one of the founding members of the Iranian Geomorphologist Association, Iranian Hazardology Association and Crisis Management Association. Also she is a member of the Center of Excellence for Spatial Analysis of Environmental Hazards. She is a professor in Earth Science Faculty, Shahid Beheshti University (SBU is one of the major universities in Iran).

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